

Abstract of the Disclosure

An optical waveguide substrate, which has less particles or concave pits caused by Oxidation Induced Stacking Fault on the quartz film when oxidizing the surface of the silicon substrate relatively thickly and forming on its surface a quartz film to become an optical waveguide, is manufactured. The making method of the optical waveguide substrate comprises a step of exposing a silicon substrate to an atmosphere of oxidizing gas while heating to form a quartz film on the surface thereof for an optical waveguide, characterized in that a density of Oxygen contained in said silicon substrate is 24 ppma at maximum. The apparatus for manufacturing the optical waveguide substrate comprises a furnace core tube¹⁸, for mounting a silicon substrate¹⁵ to be oxidized and form a quartz film on the surface thereof, of which exterior circumference is surrounded with a heating furnace¹⁷, to which a pipe¹¹ for supplying oxidizing gas and an exhaust pipe are connected, characterized in that said gas supply pipe¹¹ is connected to a vaporizer¹⁰ for evaporating hydrogen peroxide water 9.